

WHAT IS CLAIMED IS:

1. A spectrophotometer, comprising:

a light source used for emitting a light beam having a
5 predetermined wavelength range;

light guiding means for guiding the light beam from said
light source to a target sample;

a spectrometer head consisting of light diffracting means
for diffracting the light beam transmitted through the target
10 sample to produce optical spectra, light reflecting means for
reflecting the diffracted light from the light diffracting
means, light intensity measuring means for measuring intensity
of incident light reflected by the light reflecting means,
drive means for reciprocating the intensity measuring means
15 within a predetermined range, and stop means for limiting a
reciprocating movement of the intensity measuring means; and

a signal-processing unit used for reproducing a
distribution of light intensities measured by the light
intensity measuring means of the spectrometer head.

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2. The spectrophotometer according to claim 1, wherein
said light guiding means comprises a multimode optical fiber.

3. The spectrophotometer according to claim 1, wherein
25 said light diffracting means comprises a reflective diffraction

grating.

4. The spectrophotometer according to claim 1, wherein said light reflecting means comprises a concave mirror.

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5. The spectrophotometer according to claim 1, wherein said intensity measuring means comprises a photodiode array, with a plurality of photodiodes linearly arranged on a longitudinal mount at regular physical intervals.

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6. The spectrophotometer according to claim 1, wherein said drive means comprises a piezoelectric drive unit physically expandable or contractible in accordance with the level of an applied voltage.

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7. The spectrophotometer according to claim 1, wherein said drive means comprises:

a bimorph piezoelectric drive plate physically expandable or contractible in accordance with the level of an applied voltage; and

a bimorph piezoelectric fixing plate cemented together with said bimorph piezoelectric drive plate, said bimorph piezoelectric fixing plate being physically expandable or contractible in accordance with the level of the applied voltage.

8. The spectrophotometer according to claim 1, wherein said stop means comprises two stoppers arranged at predetermined positions around opposite ends of the intensity measuring means of the spectrometer head in a moving direction
5 of said intensity measuring means so as to limit the reciprocating movement of the intensity measuring means.

9. The spectrophotometer according to claim 6, wherein a displacement amplifier is attached to said piezoelectric drive
10 unit for amplifying a displacement of the piezoelectric drive unit.

10. The spectrophotometer according to claim 7, wherein said bimorph piezoelectric drive plate and said bimorph
15 piezoelectric fixing plate cemented together are different from each other in their coefficients of expansion and coefficients of contraction in response to an applied voltage.

11. A spectrophotometry using a spectrophotometer with
20 drive means, comprising:

a light transmitting step of guiding a light beam from a light source to a target sample through a multimode optical fiber so as to allow the light beam to be partially transmitted through said sample;

25 a light diffraction step of receiving the light beam,

transmitted through the sample, into a reflective diffraction grating, thus diffracting the light beam into discrete wavelengths to produce optical spectra;

5 a light reflection step of reflecting the optical spectra of the diffracted light beam by a concave mirror to a photodiode array;

a first intensity measurement step of measuring light intensities of the incident optical spectra by the photodiode array;

10 a second intensity measurement step of moving the photodiode array using the drive means by a distance equal to the physical interval between photodiodes of said photodiode array and measuring light intensities of the incident optical spectra at desired positions corresponding to said intervals;

15 and

an intensity distribution reproduction step of transmitting spectrometric analysis data, obtained at the first and second intensity measurement steps, from the photodiode array to a signal-processing unit, and reproducing a light
20 intensity distribution of the target sample by the signal-processing unit.